



# APM MAX-M23



**Before installation, read the Safety Warnings overleaf.**



**CAUTION: Risk of Danger.** Read complete instructions prior to installation and operation of the unit



**CAUTION: Risk of electric shock**

## Operating specification

**Intended Use:** The APM has been specifically designed for engineers requiring an effective way to monitor and display data. The APM accepts a range of electrical inputs (depending on the model) and displays the data on its integrated multi-format display. The APM has been designed for installation into electrical cabinets or display panels. The units come as standard with two digital outputs and one serial output.

The digital readout will still show the actual voltage even if the bar graph is out of range.

### Measurement Range

Voltage / Frequency	0–10V DC
Shunt	0–500mV DC
Current Input	0–80mA
Frequency (min. voltage 0.5V AC)	0–400Hz
DC Power Measurement	Watts

### Measurement Accuracy

DC	0.5%
Frequency	0.1%
Power Measurement	0.5%
Isolation	Reinforced 4KV @ 1 Sec 3KV @ 1 min
Measurement Category	CATII

### Impedance

Voltage / Frequency	2 MΩ
Shunt	10 MΩ
Current Input	15Ω

## Communication

Modbus Configured Parameters (Trumeter configurator required): Only function code 4 – read input register supported.

### Parameter RTU

Slave ID	0 to 255
Baud Rate	4800 to 192000
Stop Bits and Parity	2 stop bits no parity 1 stop bit even parity 1 stop bit odd parity
Communications	Enable / Disable

### Modbus Registers

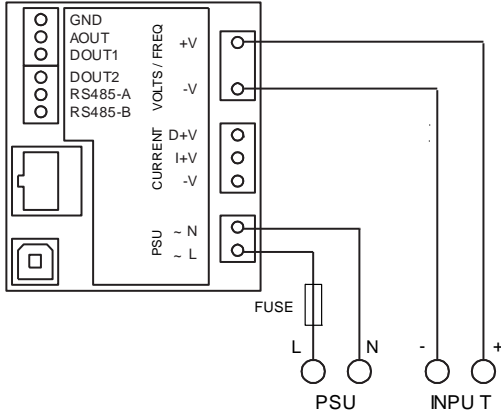
Address	Variable Type	Description
1-2	32bit Float	Displayed Value (after configuration)
3-4	32bit Float	SI measured unit (before configuration)
5	1 Byte	Alarm 1
6	1 Byte	Alarm 2

### TCP/IP Parameters

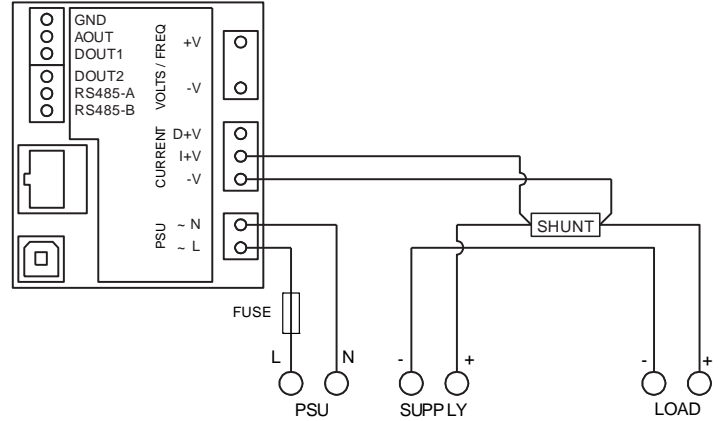
IP Address	Only adjustable if DHCP disabled
Subnet Mask	
Gateway, DNS1, DNS2, Hostname, Interface Name, Modbus Port Address, Modbus Timeout Period.	

## Wiring Diagrams

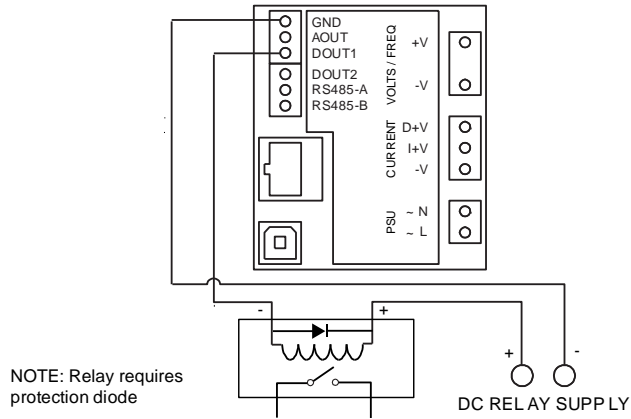
DC VOLTAGE MEASUREMENT | AC FREQUENCY MEASUREMENT



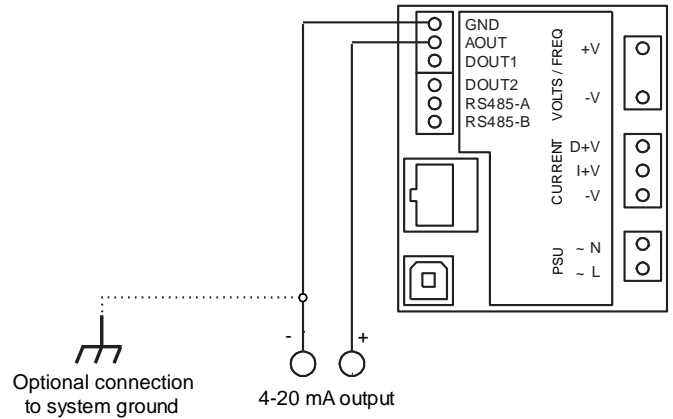
DC CURRENT MEASUREMENT USING SHUNT (500mV MAX)



RELAY OUTPUT (ACTIVATED BY DOUT1)



4-20mA ANALOG OUTPUT



## Safety Warnings



**WARNING: INSTALLATION AND MAINTENANCE MUST BE CARRIED OUT BY SUITABLY QUALIFIED AND COMPETENT PERSONEL ONLY. HAZARDOUS VOLTAGES MAY BE PRESENT ON THE CONNECTION TERMINALS.**



### INSTALLATION

- Install this product in accordance with local regulations, codes and instructions.
- An external fuse must be fitted in-line with the PSU. Recommended fuse: 0.5A Type F with a breaking capacity of 35A or greater. Fuse voltage rating must be greater than the maximum supply voltage.
- All conductors carrying hazardous voltage must have external switching or disconnect mechanisms fitted that provide at least 3mm of contact separation in all poles. The switch must be suitably located; easily reached and marked as the disconnecting device.
- Signal cables connected to this device must not exceed 30 metres long.
- If signal cables are routed outside the building, install extra surge-protection devices.
- Current measurement input, USB and all outputs: Observe maximum allowable voltages. All circuits connected to these connectors must be limited-energy and insulated by double/reinforced insulation from mains voltages according to IEC 61010-1:2010



**Failure to install or operate the unit in accordance with the above requirements may impair the electrical safety of the unit.**

**Voltage measurements: An external UL recognized or listed overcurrent protection device (fuse or circuit breaker) must be fitted in-line with the voltage lead. Recommended fuse: 0.5A Type F with a breaking capacity of 35A or greater. Fuse voltage rating must be greater than the maximum voltage that will be applied to the meter.**



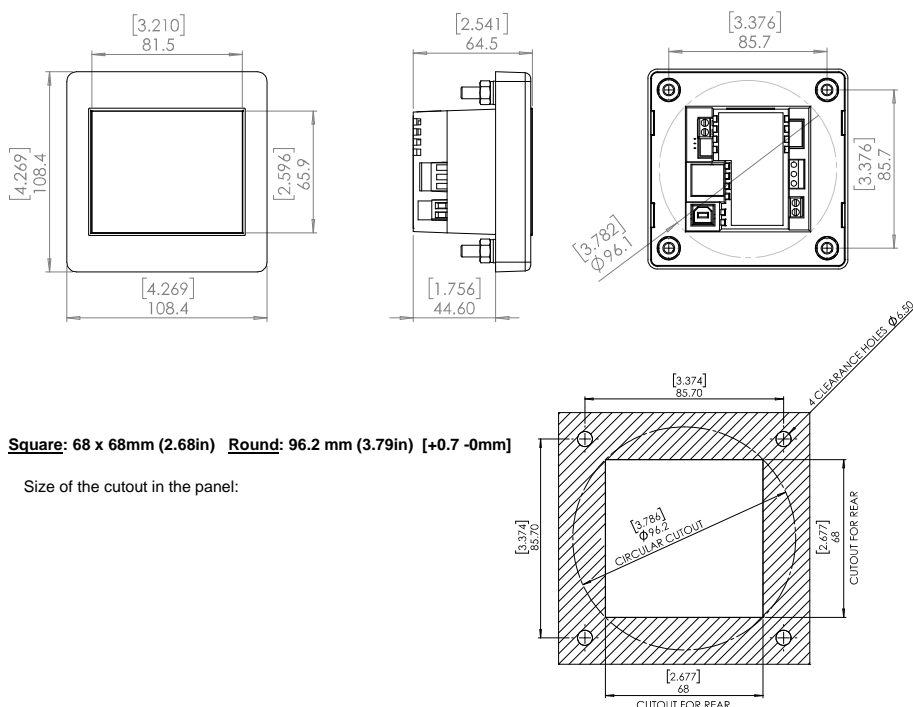
### MAINTENANCE

- Before cleaning, inspection or maintenance, isolate all power sources to the unit.
- There are no user-serviceable parts inside this unit. Never open the case.
- Inspect all external wiring connections at regular intervals. Replace any damaged wiring and tighten any loose connections.
- To clean the unit, use a dry cloth to wipe the casing.
- Take great care connecting the supply. If you connect power to the wrong terminals, it may destroy the unit.

## Software

You need the software to configure the setpoints and outputs.

## Size



## Specification

	VALUE
<b>Environment</b>	
Temperature - operating	-10 to +60 deg C
Temperature - storage	-40 to +70 deg C
Altitude	2000 metres
Relative Humidity (non-condensing) - Continuous	0 - 85 %
Relative Humidity (non-condensing) - Intermittent	0 - 95 %
Overvoltage category (IEC664)	II
Pollution Degree (IEC664)	2
IP rating (from the front)	IP65
<b>Power Supply</b>	
	<b>100-240V AC 50-60Hz</b>
Max Power	5W
Isolation	4.2KVrms, 5mA 1 min
<b>Display</b>	
Number of digits - Starburst	4
Number of digits - 7 Segment	4
Number of bar-graph segments	60
<b>Backlight colours</b>	
LCD	Positive or negative
Viewing angle	+/-70° Horizontal +/-70° Vertical
<b>Open Collector Sinking Outputs</b>	
Max voltage (open collector outputs)	34 VDC
Max current (open collector outputs)	500 mA
<b>4-20 mA Analogue Output</b>	
Accuracy	0.50 %
Max Load	240 Ω
Resolution	0.02 mA
<b>0-10V Analogue Output</b>	
Accuracy	0.50 %
Resolution	0.013V
<b>Connections</b>	
Type	Screw Terminals
Wire type	Solid or Stranded
Min. cable temperature rating	70°C (158°F)
Wire strip length	6.5mm to 7mm (0.26" to 0.28")
Wire gauge	0.8mm² - 3.3mm² (18AWG to 12AWG)
Torque	0.5-0.6Nm (4.42-5.31 lbf-in)
<b>In the Box</b>	
APM	
Getting started & safety guide	
IP65 Gasket	
Mounting Kit	
<b>Dimensions &amp; Weight</b>	
Panel Cut-out: 68 x 68 mm (2.68 in) square; 106mm (4.00 in) round +0.7 -0 mm (0.02 in). Max. panel thickness: 11.0 mm.	
Depth behind panel inside front: 55mm (2.17in) incl. external connections. Weight: 340 grams.	